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ABSTRACT

It has been suggested that egotistical attributions for success and failure are mediated by the affective reactions resulting from achievement outcomes. To establish the motivational impact of failure-related affect on subsequent ego-defensive attributions, an excitation transfer paradigm was used to manipulate the negative feelings elicited by failure. After working on a social skill test, 33 male subjects engaged in a physical exercise task. Failure feedback on the test performance was given either one, five, or nine minutes after exercise. Compared to the nine-minute control condition, more defensive attributions were found in the five-minute condition, and somewhat less defensive attributions were found in the one-minute condition. Excitation transfer theory implies that the displeasure elicited by the negative feedback is enhanced in the five-minute condition and underestimated in the one-minute condition. Results offer support for the notion that outcome-related affect motivates egotistical causal attributions. The individual, having a pervasive need to view himself positively, experiences success and failure as affectively significant events. (Author/NRB)

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# RESIDUAL EXCITATION AND EGO-DEFENSIVE ATTRIBUTIONS

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# Residual Excitation and Ego-Defensive Attributions

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It has been demonstrated repeatedly that individuals' explanations of their positive behaviors emphasize internal attributions, whereas external attributions are emphasized whenever negative outcomes have to be explained (e.g., Federoff & Harvey, 1976; Snyder, Stephan, & Rosenfield, 1976; Wortman, Costanzo, & Witt, 1973). The operation of self-serving, or ego-defensive biases has generally been used to explain these results. By taking credit for good acts and denying blame for bad outcomes the self-esteem of an individual is said to be enhanced or protected.

Miller & Ross (1975) rejected this interpretation and replaced it by an information processing notion, which seemed to be able to explain individuals' asymmetrical attributions for success and failure without resorting to motivational terms. While the results of early studies presumably demonstrating self-serving biases may be subject to alternative, nonmotivational interpretations, Bradley (1978) argues that the data of recent studies cannot be explained this way. Again, the existence of motivational distortions in the causal inference process is suggested. However, as long as motivational explanations do not tell how the egotistical bias enters the inference process, they somehow seem like a "cop-out." It is just too facile to contend that people see the world the way they would like it to be. Data concerning the processes responsible for individuals' ego-enhancing or self-protecting attributions is needed to demonstrate unequivocally the

existence of egotistical bias.

Weary (in press) has suggested that egotistical attributions for success and failure are mediated by the affective reactions resulting from achievement outcomes. Accordingly, people attribute success internally in order to feel responsible for and prolong the positive affect generated by success. They make external attributions for failure in order to dissociate themselves from the negative affect generated by failure.

So far, empirical support for this notion has been scarce and hardly convincing. Weary (in press) presents some correlational evidence which-- because of the inherent interpretational problems of the correlational approach-- creates more questions than it answers. Stephan & Gollwitzer (Note 1)conducted two experimental studies. In the first study, the perceived source of outcome-related affect is manipulated by a placebo pill. The second study manipulates affect by a false feedback of arousal procedure. In both studies, reduced affective responses to success lead to less ego-enhancing attributions. The affect manipulation had no effect on ego-defensive attributions for failure. The authors blame the difficulties of manipulating negative affect after failure for this unexpected result.

The purpose of the present study is to establish the motivational impact of failure-related affect on subsequent ego-defensive attributions. An excitation transfer paradigm was used to manipulate the negative feelings elicited by failure. According to Zillmann's (1978) attributional version of excitation transfer theory, residues of excitation from physical exertion can intensify a subsequent, potentially independent

affective state, e.g., the feeling of anger generated by an aggressor (Zillmann & Bryant, 1974), if the individual does not causally connect his residual excitation to the prior physical exertion. Subjects confronted with failure feedback under these conditions should experience elevated displeasure which in turn should increase defensive attributions. Residual arousal that is properly attributed to its actual source cannot transfer into affect generated by an independent inducing stimulus. If anything, the individual should underestimate his affective reactions to the stimulus, because he will tend to identify them with the excitation induced by prior exercise. Failure feedback under these conditions should be accompanied by reduced negative feelings and hence less defensive attributions.

Cantor, Zillmann, & Bryant (1975) established a procedure to isolate the above-mentioned conditions. Subjects are asked to engage in a short exercise task. During recovery, perceived and actual excitation measures are taken. Due to the different recovery rates of these two measures, (a) high actual and perceived residual excitation is found after 1 minute of recovery, (b) moderate, but unnoticed residual excitation is present after 5 minutes of recovery, and (c) no residual excitation is found after 9 minutes.

This procedure was followed in the pretest of the present study and similar results were obtained. In the main experiment, subjects worked on a social skill test. Failure feedback was given either 1, 5 or 9 minutes after exercise. The 5-minute condition should allow excitation transfer to failure-related affect. Compared to the control condition, i.e., the 9-minute condition, increased egotistical attributions

would be expected. In the 1-minute condition, the failure-related displeasure should be underestimated. Consequently, less ego-defensive attributions than in the control condition would be expected.

## Method

### Pretest

Eleven male undergraduates at the University of Texas at Austin were run in the pretest. Upon arriving at the experimental laboratory, the subject was greeted by a female experimenter. She explained that the purpose of the experiment would be to study the effects of physical arousal on a person's liking of the natural environment. If the subject agreed to participate, the experimenter took a baseline reading of his systolic blood pressure (a Labtronix LAB4001 electronic sphygmomanometer was used). Then she asked the subject to pedal a Walton exercise bicycle, while watching projected nature slides. At the end of one minute, the exercise was terminated. During the next 13 minutes, blood pressure was recorded at 2-minute intervals, and the subject was asked about this level of arousal at 1-minute intervals. The subject was told to report his arousal state as the percentage of his original post-exercise arousal that was still present. Slides were shown throughout recovery.

Determination of time phases for the main experiment. The obtained measures of subjects' actual vs. perceived arousal were used to determine the optimal onset times for the three post-recovery phases: namely, a) highly aroused and still aware of that arousal; b) still highly aroused but no longer aware of that arousal; and c) no longer aroused. The graphed time courses of the two measures suggested 1, 5 and 9 minutes

after the termination of the exercise. In order to test the appropriateness of the selected three points in time, analyses of variance were conducted. The overall Fs were significant for reported arousal, $F$ (2, 20) = 49.96, $p < .01$, and systolic blood pressure, $F$ (2, 20) = 94.83, $p < .01$. Subsequent t-tests revealed that subjects were significantly more aware of residual arousal 1 minute after exercise than 5 and 9 minutes after exercise (see Table 1). At these two times, mean reported arousal had pretty much returned to base level. No significant difference could be found between the 5-and 9-minute condition. Blood pressure exhibited the required differentiations at the three points in time. One and five minutes after exercise it was significantly elevated, and 9 minutes after, it was no longer significantly above base level (see Table 1). So it appears that the selected points in time represent the desired three post-recovery phases.

Main Experiment

Subjects. Thirty-nine male subjects (from the same introductory course as the subjects in the pretest) were run. Six subjects were excluded because of suspicions regarding the performance feedback. They were equally distributed across conditions.

Procedure. The experimental sessions were conducted by a male (E1) and a female (E2) experimenter. Subjects were greeted by E1, who explained that the session involved "two separate experiments." The first experiment was introduced as a "social sensitivity test" designed to measure the subject's ability to perceive the feelings of others. The second experiment was said to be an exercise task. Its purpose was described in a manner identical to the pretest.

Following this introduction, E1 proceeded with the social sensitivity test. The test required subjects to read pairs of suicide notes and to identify which one was faked (Ross, Lepper, & Hubbard, 1975). A total of 17 pairs was presented. After the subject had finished, E1 collected the answer sheet and dismissed himself on the pretext of "going to score the results." At this point E2 entered the room. She began by having the subject complete a short physical fitness questionnaire, which inquired about the subject's degree of physiological fitness and the amount of his weekly physical exercise. After the subject was seated on the exercise bicycle, a baseline systolic blood pressure was taken. As in the pretest, a slide projector loaded with nature slides was started. Subjects in theperceived residual arousal condition were asked to pedal after 9 minutes of slide viewing. Those in the unperceived residual arousal condition began pedalling after 5 minutes. The no residual arousal group started pedalling after 1 minute. Subjects always pedalled the bicycle for one minute as hard as they could. The slide show lasted for ten minutes. One minute after the end of the slide show, E2 obtained a systolic blood pressure reading and asked the subject to report his arousal state. Then she left to fetch E1, who was blind to the subject's recovery condition. When E1 entered the room, he had a prewritten false feedback note which was attached to the subject's answer sheet. The note said that only 6 of his answers were correct, and that 78% of the college student population had scored higher.

In all conditions, the final phase of the experiment involved administration of several rating scales. First, subjects completed an attribution questionnaire. They were asked to indicate the degree to

which ability, effort, task difficulty and luck influenced their outcome (Weiner et al., 1971). Each causal factor was presented with an 11-point scale running from "hindered greatly" through "had no effect" to "helped greatly." Finally, subjects were asked to rate their performance on the test (in terms of the percentage of people who did better), the importance of "social sensitivity," and the accuracy of the suicide note test in measuring this ability.

## Results and Discussion

Equivalence of groups. The self-ratings on physical fitness, the reported amount of weekly exercise, and the baseline measure of systolic blood pressure were subjected to analyses of variance. None of these analyses yielded significant effects of recovery conditions (all $Fs < 1.0$). Therefore, the differences observed in the attributional responses cannot be accounted for in terms of a failure of random assignment. There were likewise no differences concerning the perceived outcome on the test ($F < 1.0$); all groups showed means above 70%. It appears that the failure feedback was equally successful in all conditions.

Appropriate timing of failure feedback. It is crucial for the interpretation of the attributional differences between conditions that the time phases aimed for in the pretest were established in the main experiment. Again, the overall $F$s were significant for systolic blood pressure, $F$ (2, 30) = 23.28; $p < .01$, and reported arousal, $F$ (2, 30) = 14.56, $p < .01$. As indicated in Table 2, systolic blood pressure decreases constantly over time (all possible contrasts are significant), whereas no significant difference can be found between reported arousal in the 5- and 9-minute condition. It can be assumed therefore that failure feedback was given when a) residual excitation could interfere

with failure-related feelings (1-minute condition), b) residual excitation could transfer to the negative affect elicited by failure (5-minute condition), and c) no residual excitation was present (9-minute condition). Relatively high self-reports of arousal were found in the 5- and 9-minute condition. This might be a consequence of the emotional involvement generated by the suicide note test (Ross, Lepper, & Hubbard, 1975).

Attribution factors. Ego-defensive subjects blame external factors for a negative outcome and refuse to correct their positive views of ability and effort. Accordingly, a composite to assess ego-defensiveness was built. The external factors of task difficulty and luck were added and from this total the attributions to the internal factors of ability and effort were subtracted. As the attribution scales were scored from +5 (... hindered greatly) to -5 (... helped greatly), a high score represents more egotistical attributions.

The overall F for the attributional composite was significant, $F$ (2, 30) = 5.04, $p < .02$. Subsequent comparisons revealed that subjects in the 5-minute condition show significantly more ego-defensive attributions than subjects in the control condition, $t$ (20) = 2.56, $p < .02$, and the 1-minute condition, $t$ (20) = 2.72, $p < .02$. Subjects in the 1-minute condition show less attributional defensiveness than control subjects. This difference is not significant, however, $t$ (20) = .95, $p < .36$.

The results on the attributional composite (see Table 3) offer strong support for the hypothesis that failure-related negative affect mediates ego-defensive attributions. Elevated displeasure led to increased ego-defensiveness, whereas reduced displeasure allowed subjects to modify the positive view of their ability and effort. The subjects in the excitation

interference condition do not show significantly less egotism than the control subjects. According to Zillmann (1978), the interference effect of properly attributed high arousal is less pronounced than the transfer effect of unnoticed physiological arousal. It seems likely that some outcome-related negative feelings remained.

Task importance. An individual can protect his/her self-esteem after negative outcomes via external attributions. But there are other possibilities. The individual can devalue the ability the test is supposed to measure. Lacking a trivial ability is no threat to one's self-esteem. Analyses of variance revealed no significant differences in perceived test accuracy ($F < 1.0$). However, there are differences in the perception of the importance of the ability the test supposedly measures, $F$ (2, 29) = 2.89, $p < .08$. Subjects in the excitation transfer condition rated the importance of social sensitivity significantly lower than subjects in the interference condition, $t$ (19) = 2.71, $p < .02$, indicating again that elevated displeasure after failure increases ego-defensiveness. No further contrasts were significant.

## Conclusion

The results of the present study are difficult to account for in terms of information processing explanations of the asymmetrical attributions for success and failure (Miller & Ross, 1975). As these authors assign no role to outcome-related affect, they would not make differential predictions for elevated affective responses.

As the present study taps into the processes responsible for egotistical attributions, it quickly comes into conflict with established

attributional theories of achievement motivation (Weiner, 1972, 1974). Weiner considers affect associated with success and failure to be a consequence of attributions, and attributions are considered to be purely cognitive manifestations of the achievement process in general and thus function as causes of future achievement behavior. In the present study, outcome-related affect is thought to motivate egotistical attributions, and attributions in general are seen as prone to reflect defensive, self-serving biases. This vulnerability of attributions to motivational tendencies calls into question their causal role as information-processing determinants of subsequent achievement behavior.

It is evident that, contrary to cognitive models of achievement motivation, the present study conceives of the individual as having a pervasive need to view himself positively. Therefore, the individual experiences success and failure as affectively significant events.

## Reference Note

1. Stephan, W. G., & Gollwitzer, P. M. Affect as a mediator of attributional egotism. Unpublished manuscript, University of Texas at Austin, 1979.

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Table 1

Mean Perceived and Actual Residual Arousal:

Pretest (N=11)

| Arousal measure | Time of measurement | | | |
|---|---|---|---|---|
| | Before exercise | Minutes after Exercise 1 | 5 | 9 |
| Self-report | - | 69[b] | 9[a] | 11[a] |
| Systolic blood pressure | 127[a] | 183[c] | 142[b] | 128[a] |

Note. For each measure, means having no letter in the superscript in common differ significantly at $p < .01$.

Table 2

Mean Perceived and Actual Residual Arousal

Prior to Failure Feedback:

Main Experiment

| Arousal measure | Post-exercise recovery condition | | |
|---|---|---|---|
| | 1 minute | 5 minutes | 9 minutes |
| Self-report | $75^{b}$ | $50^{a}$ | $41^{a}$ |
| Systolic blood pressure (difference scores) | $50^{c}$ | $29^{b}$ | $8^{a}$ |

Note. The difference scores for systolic blood pressure represent mean elevation above the baseline. For each arousal measure, means having no letter in the superscript in common differ significantly at $p < .01$. For all three conditions N = 11.

Table 3

Mean Attributional Ego-Defensiveness:

Main Experiment

| Post-exercise recovery condition | | |
|---|---|---|
| 1 minute | 5 minutes | 9 minutes |
| $-1.36^{a}$ | $3.36^{b}$ | $.09^{a}$ |

Note. Means having no letter in the superscript in common differ significantly at $p < .02$. For all three conditions N = 11.